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Title of the Invention: Flexible magnetic disk

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SPECIFICATION

1. Title of the Invention

Flexible magnetic disk

2. Scope of Claim for a Utility Model Registration

(1) A flexible magnetic disk characterized by comprising an copy preventing unit at the desired position in an accommodation unit.

(2) A flexible magnetic disk as described in Claim (1), characterized in that said copy preventing unit is a semiconductor integrated circuit for storing specific information.

(3) A flexible magnetic disk as described in Claim (1), characterized in that said copy preventing unit is a semiconductor integrated circuit having the function of converting the information.

(4) A flexible magnetic disk as described in any one of Claims (1) to (3), characterized in that said copy preventing unit is buried in the exterior of the jacket for said accommodation unit.

3. Detailed Description of the Invention

(Technical Field)

This invention relates to prevention of copy of a program stored in a description (sic) medium used for the computer or the like.

(Background of the Invention)

With the highly dense and sophisticated functions of such semiconductor devices as IC and LSI, the computer has

been reduced in size and price from minicomputer to microcomputer. Now that these computers have come to be widely used increasingly for many industries, various software suited to the applications in many fields have been developed and supplied. The development of the software, i.e. the application programs that have been supplied with the extension of the use of the computer require a great amount of labor and time. Thus, the application programs supplied to the user have increased in price.

A flexible magnetic disk (hereinafter referred to as the magnetic disk), a hard magnetic disk, a magnetic tape, etc. is used as a storage medium for application programs. Among these disks, the magnetic disk which is compact and easy to handle is widely used.

In view of this situation, persons have appeared who illegally copy the application programs of the magnetic disk and sell them at a low price, thereby posing a social problem. In order to prevent the illegal duplication of the programs stored in the magnetic disk, a way is discussed to protect the programs under the copyright law, the patent law, etc. The special characteristics of the programs, however, makes it difficult to protect them under any of these laws. For this reason, it has been proposed to protect the programs by framing a program right law. Nevertheless, such a law has yet to be instituted as sufficient program protection is difficult. Under the circumstances, many persons still continue to sell the programs copied illegally.

Considering this situation, a password has been introduced in the programs, the method of recording in the magnetic disk or the ID information of the sectors has been changed to prevent illegal copies. All of these methods, however, are software means for protection and trespassed by the sellers of illegal copies, and therefore have failed to be effective means for protection against illegal acts.
(Object of the Invention)

This invention has been conceived in view of this situation, and the object thereof is to provide an copy

preventing unit in a magnetic disk mounted in a magnetic disk drive unit (hereinafter referred to as the FD drive unit) to thereby prevent the duplication of the program in the magnetic disk.

(Embodiment of the Invention)

Next, an embodiment of the invention shown in the drawing will be explained. Fig. 1 is a front view of a magnetic disk as an example of the storage medium. A copy preventing unit 2 is arranged at the desired position of the magnetic disk 1. The copy preventing unit 2 is formed of a semiconductor integrated circuit and is comprised of a logic circuit or a storage circuit. In the case where the semiconductor integrated circuit of the copy preventing unit 2 is configured by a logic circuit, the information electrically input to the copy preventing unit 2 is converted to another information by the logic circuit and output from the copy preventing unit 2. For example, the value of each bit of the input information is inverted or the input information is converted and output by being arithmetically processed with a certain numerical value.

In the case where the semiconductor integrated circuit is configured by a storage circuit, on the other hand, specific information is stored therein in advance.

In the former case, i.e. in the case where the semiconductor integrated circuit of the copy preventing unit 2 is configured by a logic circuit, a program is stored in the magnetic disk 1 through the copy preventing unit 2. The electrical signal of the program is converted by the copy preventing unit 2 and then stored in the disk as meaningless information quite different from the program. Therefore, even in the case where the stored information is copied from the magnetic disk 1 by a third party, the program information cannot be detected, thereby making it possible to substantially prevent the duplication of the program completely.

In the case where the magnetic disk 1 is used normally, the information from the disk is logically converted

inversely by the FD disk drive having the logic conversion function inverse to the information conversion logic of the copy preventing unit 2 thereby to detect the program information.

In the latter case, i.e. in the case where the copy preventing unit 2 is configured by a storage circuit for storing specific information, the specific information of the copy preventing unit 2 is accessed by the FD drive unit for the program stored in the disk, as a condition for executing the particular program. Then, the third party is unable to access and execute the program by the magnetic disk 1, and therefore an illegal duplication can be substantially prevented.

In the case where a legitimate person uses the magnetic disk 1, the FD drive unit for accessing the specific information of the copy preventing unit 2 is to be used.

Fig. 2 is a front view of the copy preventing unit 2 including a semiconductor integrated circuit portion 3, lead wires 4 and a base 5.

Fig. 3 shows a part of an enlarged sectional view taken in line A-A in Fig. 1. Reference numeral 6 designates jackets, numeral 7 liners, numeral 8 a disk and numeral 9 the cover of the copy preventing unit 2.

The jackets 6 and the liners 7 form an accommodation unit 10 of the disk 8. The magnetic disk 1 is configured by accommodating the disk 8 in the accommodation unit 10.

The copy preventing unit 2 is buried in the groove 11 formed on the exterior of the jackets 6 of the accommodation unit 10, so that the surface of the jackets 6 is flush with the surface of the copy preventing unit 2. Thus, the magnetic disk 1 can be mounted on or demounted from the FD drive unit without any problem. A cover 9 is made of a very thin appropriate material such as paper and resin tape and stuck to the jackets 6 in such a manner as to cover the copy preventing unit 2.

(Effects of the Invention)

This invention is configured as described above, and

therefore, unlike the software program protection means, exhibits a significant effect of preventing the duplication of the program in the magnetic disk completely.

4. Brief Description of the Drawings

The drawings illustratively show an embodiment of the invention, in which Fig. 1 is a front view of the magnetic disk 1, Fig. 2 is a front view of the copy preventing unit, and Fig. 3 is a part of an enlarged sectional view taken in line A-A in Fig. 1.

1...Magnetic disk, 2...Copy preventing unit,
3...Semiconductor integrated circuit portion, 4...Lead
wire, 5...Base, 6...Jacket, 7...Liner, 8...Disk,
10...Accommodation unit.

FIG. 1 is a front view of the magnetic disk 1

FIG. 1
第 1 図

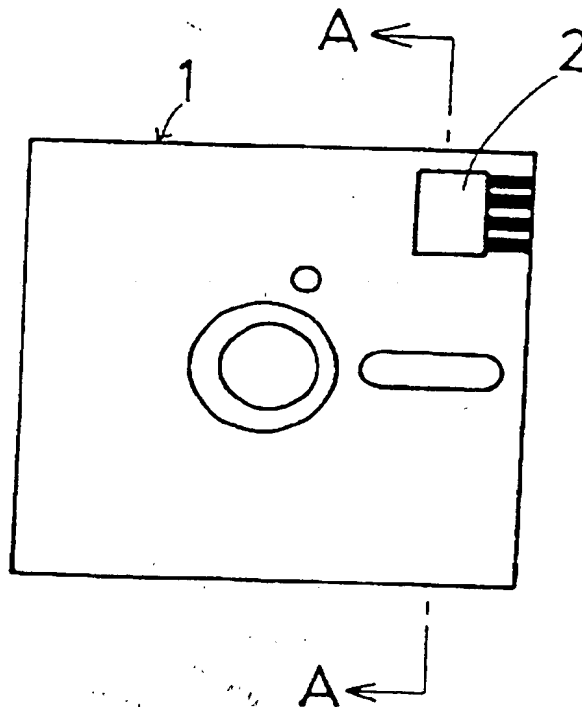
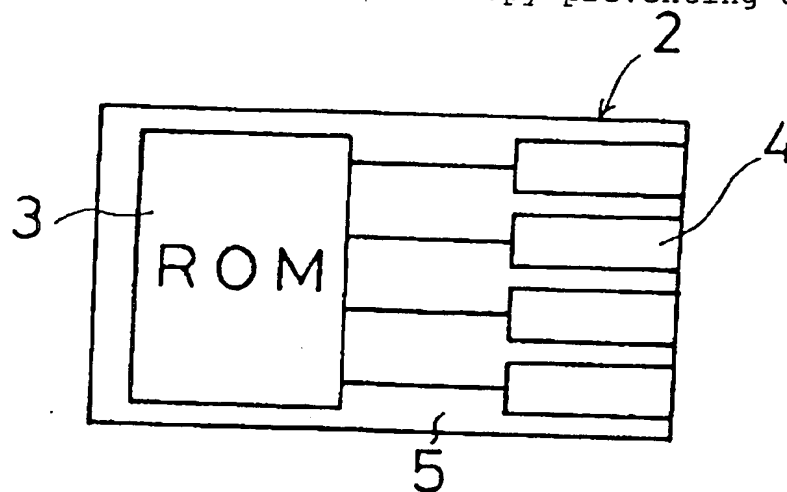


FIG. 2
第 2 図

FIG. 2 is a front view of the copy preventing unit



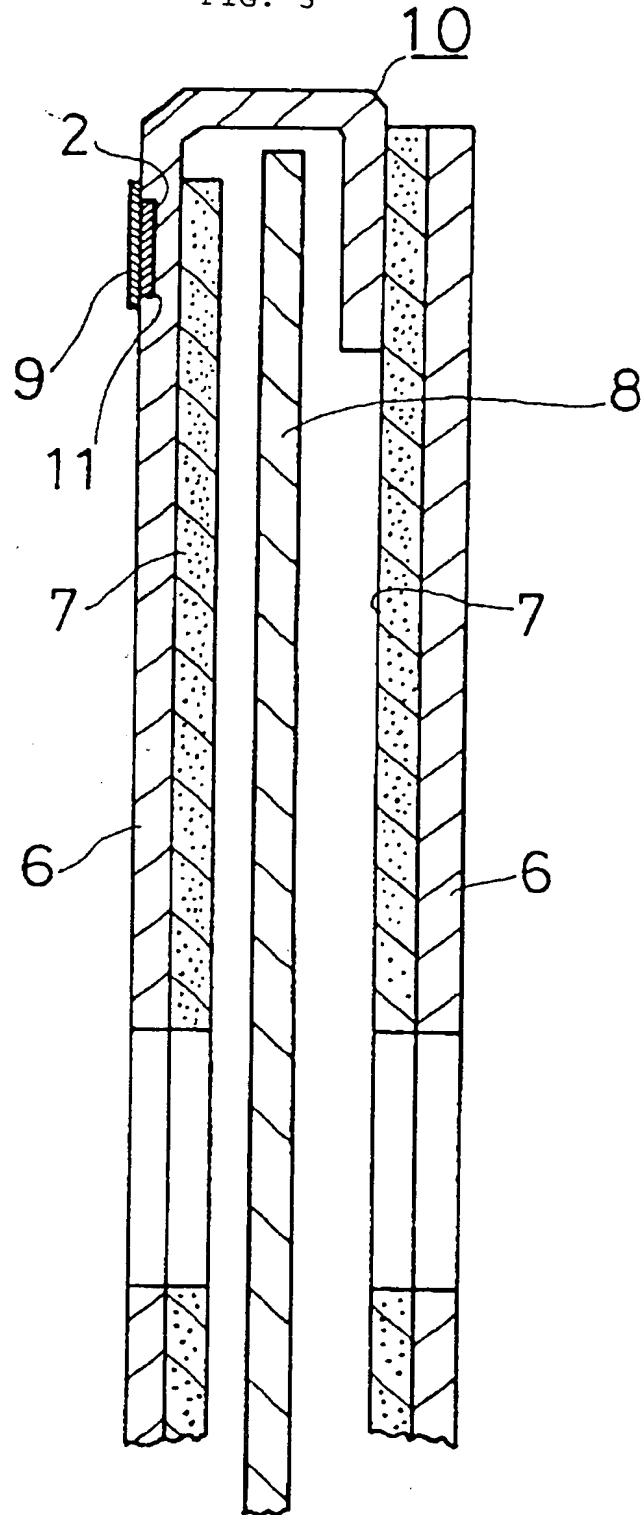
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FIG. 3 is a part of an enlarged sectional view taken in line A-A in FIG. 1

第 3 図

FIG. 3



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